U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

1200 New Jersey Ave, SE
Washington, D.C. 20590

SEP 3 2010

Mr. James Jagemann
Integrity Inspection Services
21422 Provincial Boulevard
Katy, TX 77450

Ref. No. 10-0174

Dear Mr. Jagemann:

This responds to your August 12, 2010 email regarding the transportation of radioactive material under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you request clarification of the method of calculation used to determine the level of contamination on the external surfaces of a package in accordance with § 173.443 of the HMR. Your question is paraphrased and answered as follows:

For instances when the wipe efficiency is assumed to be 0.10, if the instrument used to measure radioactivity provides a reading in counts per minute (cpm), do I need to include a factor to convert cpm to disintegrations per minute (dpm) or does the assumed 0.10 wipe efficiency incorporate a conversion from cpm to dpm?

In addition to the assumed 0.10 wipe efficiency, an instrument efficiency factor is needed to calculate the contamination activity on the wiping material. The wipe efficiency factor does not account for the effectiveness of the instrument in measuring radioactivity. The instrument efficiency factor is a function of the efficiency of the specific instrument in measuring the radioactivity on the wiping material. This instrument efficiency factor may be provided on the instrument, obtained through the manufacturer or supplier of the instrument, or determined by using reference standards of known radioactivity. Therefore, in your case, both a wipe efficiency factor and an instrument efficiency factor are needed to calculate the level of contamination in dpm.

I hope this information is helpful. If you have further questions, please contact this office.

Sincerely,

Ben Supko

Ben Supko
Acting Chief, Standards Development
Office of Hazardous Materials Standards

Der Kinderen
§171.8
§173.443
RAM
10-0174

Drakeford, Carolyn (PHMSA)

From: INFOCNTR (PHMSA)
Sent: Friday, August 13, 2010 9:00 AM
To: Drakeford, Carolyn (PHMSA)
Cc: DerKinderen, Dirk (PHMSA)
Subject: FW: Hazmat Information Center Feedback: General Information, Regulations, and Definitions (Sections 171.1 – 171.26)

-----Original Message-----
From: PHMSA-Feedback [mailto:PHMSA-Feedback]
Sent: Thursday, August 12, 2010 1:05 PM
To: PHMSA HM InfoCenter; PHMSA Webmaster
Subject: Hazmat Information Center Feedback: General Information, Regulations, and Definitions (Sections 171.1 – 171.26)

I would like to obtain clarification for the calculation of NORM loose surface contamination for DOT purposes is correct.

Per the regulations:

Removable (loose) contamination levels shall be established by wiping an area of 300cm2 of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements must be taken in the most appropriate locations to yield a representative assessment of the non-fixed contamination levels. [49CFR173.443(a) (1)]

The amount of radioactivity measured on any single wiping material, divided by the surface area wiped and the efficiency of the wipe procedure (the fraction of removable contamination transferred from the surface to the absorbent material), may not exceed 22 dpm/cm2 alpha or 220 dpm/cm2 beta/gamma. For this purpose the actual wipe efficiency may be assumed to be 0.10. [49CFR173.443(a)(1)]

If using the above regulations, the loose surface calculation would be:

cpm/300/0.1/ = dpm/cm2

where:
- cpm = meter reading
- 300 = wipe area cm2
- 0.1 = wipe efficiency

My question is, do I also need to input a factor for converting cpm to dpm due to the fact that the field survey instrument used to count the smear reads out in units of cpm or does the above wipe efficiency assumption include that conversion?

Thank you for your help in this matter.

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